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09/548,141	04/13/2000	Douglas Lee Schales	YOR9-2000-0185-US1	7716

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EXAMINER

ALAM, UZMA

ART UNIT	PAPER NUMBER
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2157

DATE MAILED: 07/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/548,141

Applicant(s)

SCHALES ET AL.

Examiner

Uzma Alam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 April 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

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### **DETAILED ACTION**

This action is responsive to the amendment filed on April 21, 2003. Claims 1-39 are pending. Claims 1-39 represent a method and apparatus for classifying a packet using a tree structure.

#### ***Response to Arguments***

Applicant's arguments with respect to claims 1-39 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

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Claims 1-5, 7-21, 23, 24, 28-30, and 33-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Edwards et al. U.S. Patent No. 6,320,848. Edwards discloses a method for classifying packets using dynamic decision trees which can be modified (see abstract and column 7, lines 48-57)

As per claims 1 and 38, Edwards discloses a method and apparatus for classifying a data packet, the method and means comprising:

receiving the data packet at a root node of a classification tree (receiving a data packet; column 2, lines 47-67; column 3, line 3-20; column 5, lines 33-57);

successively passing the data packet to each child of a first tree level until a first child of the first tree level of the classification tree indicates a satisfaction of a node-criteria of said first child, and the first child forming said data packet into a matched packet (traversing the tree; column 3, lines 43-67; column 5, lines 33-57); and

repeating the step of passing and forming for a next tree level until no first child of said next level at a succeeding next level indicates satisfaction of the node-criteria of said first child of said next level (having a recursive procedure; column 3, lines 33-67; column 6, line 1-5).

As per claim 2, Edwards discloses a method as recited in claim 1, wherein the step of passing includes executing a set of code which returns a status indication (indicating whether the packet was classified or not; column 3, lines 43-55).

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As per claim 3, Edwards discloses a method as recited in claim 1, wherein the step of forming includes the first child specifying a set of code to be run subsequently (having a procedure to form new nodes; column 3, lines 43-67).

As per claim 4, Edwards discloses a method as recited in claim 3, wherein the step of specifying includes specifying the set of code to be run following satisfaction (running code when a packet is classified; column 3, lines 37-55; column 9, lines 18-57).

As per claim 5, Edwards discloses a method as recited in claim 1, further comprising dynamically adding at least one node in at least one level of the classification tree (adding nodes; column 3, line 37-43; column 4, lines 1-19, 37-59; column 5, lines 1-33).

As per claim 7, Edwards discloses a method for classifying a packet, said method comprising suspending a packet classification process in progress for said packet (suspending classification; column 5, lines 24-32); and obtaining external information employed in said classifying (getting information inputted; column 3, lines 22-29, 43-55; column 4, lines 1-35).

As per claim 8, Edwards discloses a method in claim 7, wherein the step of obtaining includes augmenting a node-criteria of a node in a classification tree with external information (getting information inputted and adding it to the node criteria; column 3, lines 22-29, 56-67; column 4, lines 9-19).

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As per claim 9, Edwards discloses a method as in claim 8, wherein the external information includes identification of the originator of said packet (getting the source of the packet; column 1, lines 19-26; column 3, lines 43-48; column 4, lines 1-6).

As per claim 10, Edwards discloses a method as in claim 8, wherein the external information includes authentication of an originator of said packet (authenticating the source; column 1, lines 19-26; column 2, lines 47-67; column 3, lines 43-48; column 4, lines 1-6).

As per claim 11, Edwards discloses a method as recited in claim 7, wherein the classification process is an extendible classifier process (adding nodes to the tree; column 4, lines 9-35).

As per claim 12, Edwards discloses a method as recited in claim 1, further comprising the step of parsing said matched packet and generating relevant information (getting information from the header; column 3, lines 43-55).

As per claim 13, Edwards discloses a method as recited in claim 1, further comprising the step of transforming said matched packet into a transformed packet (matching the packet based on the inputted information; column 3, lines 37-43).

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As per claim 14, Edwards discloses a method as recited in claim 1, further comprising associating the packet with a last first child indicating satisfaction (traversing until satisfaction; column 5, lines 58-67; column 6, lines 1-62).

As per claim 15, Edwards discloses a method as recited in claim 14, further comprising executing a set of code in accordance with said last first-child (running code when packet is classified; column 5, lines 58-67; column 6, lines 1-62).

As per claim 16, Edwards discloses a method as recited in claim 1, further comprising determining a disposition of the data packet (checking the header of the packet for classification information; column 3, lines 37-55).

As per claim 17, Edwards discloses a method for determining disposition of a packet received at a child node, said method comprising:

passing said packet and a first disposition of said packet to an external process (getting inputted information; column 3, lines 43-67; column 4, lines 1-35; column 5, lines 24-32); and

said external process augmenting the packet disposition by employing a process specific means; and returning the augmented packet and an augmented disposition to the child node (associating the information with the packet; column 4, line 10-19; column 5, lines 1-25).

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As per claim 18, Edwards discloses a method as recited in claim 17, further comprising suspending a disposition process in progress for said packet (suspending classification; column 5, lines 24-32).

As per claim 19, Edwards discloses a method as in claim 18, wherein the augmented disposition includes identification of an originator of said packet (obtaining the source of the packet; column 1, lines 19-26; column 3, lines 43-48; column 4, lines 1-6).

As per claim 20, Edwards a method as in claim 18 wherein the augmented disposition includes authentication of an originator of said packet (authenticating the source; column 1, lines 19-26; column 2, lines 47-67; column 3, lines 43-48; column 4, lines 1-6).

As per claim 21, Edwards discloses a method as recited in claim 18, wherein the disposition is employed for policy enforcement (setting rules for the tree; column 3, lines 8-55).

As per claim 23, Edwards discloses a method as recited in claim 1, further comprising employing the classification process for application level classification (classifying the packet based on an application; column 2, lines 38-67; column 3, lines 3-55).

As per claim 24, Edwards discloses a method as recited in claim 23, wherein the disposition is employed for policy enforcement (setting rules for the tree; column 3, lines 8-55).



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As per claim 28, Edwards discloses an apparatus to classify a data packet, the apparatus comprising:

a network interface device to receive the data packet from the physical network and pass the data packet to the root node of a classification tree, and the reverse, to receive the data packet from the root node and send the data packet to the physical network (receiving a packet at a root node of a tree; column 2, lines 47-67; column 3, lines 3-20; column 5, lines 33-57);

a packet module to successively pass the packet from child node to child node at a next tree level until a first child node of the next tree level of the classification tree which indicates a satisfaction of a node-criteria of the first child node, and to form the data packet into a matched packet until no first child node of at a succeeding next level indicates satisfaction of the first node-criteria of the first child node of the succeeding next level (traversing the tree until a packet is classified; column 3, lines 33-67; column 5, lines 33-57; column 6, lines 1-5; column 7, lines 48-57).

As per claim 29, Edwards discloses an apparatus as recited in claim 28, wherein a portion of the apparatus is implemented as an accelerator chip (fast RAM; Figure 2; column 3, lines 1-20).

As per claim 30, Edwards discloses an apparatus as recited in claim 28, wherein the apparatus is employed for application level classification (application level classification; column 2, lines 38-67; column 3, lines 3-55).

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As per claim 33, Edwards discloses a method as recited in claim 2, wherein the status indication is of the pm\_t type (indicating a matched packet; column 3, lines 43-55).

As per claim 34, Edwards discloses an article of manufacture comprising a computer-usable medium having computer readable program code means embodied therein for causing classification of a data packet, the computer readable program code means in said article of manufacture comprising computer readable program code means for causing a computer to effect the steps of claim 1 (computer readable program code; column 2, lines 47-67).

As per claim 35, Edwards discloses an article of manufacture as recited in claim 34, the computer readable program code means in said article of manufacture further comprising computer readable program code means for causing a computer to effect dynamically adding at least one node in at least one level of the classification tree (computer readable program code; column 2, lines 47-67; adding nodes; column 3, line 37-43; column 4, lines 1-19, 37-59; column 5, lines 1-33).

As per claim 36, Edwards discloses an article of manufacture comprising a computer-usable medium having computer readable program code means embodied therein for causing classification of a data packet, the computer-readable program code means in said article of manufacture comprising computer readable program code means for causing a computer to effect the steps of claim 8 (computer readable program code; column 2, lines 47-67).

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As per claim 37, Edwards discloses a computer program product comprising a computer usable medium having computer readable program code means embodied therein for causing a determination of a disposition of a packet, the computer readable program code means in said computer program product comprising computer readable program code means for causing a computer to effect the steps of claim 18 (computer readable program code; column 2, lines 47-67).

As per claim 39, Edwards discloses an apparatus for determining disposition of a packet received at a child node, said apparatus comprising:

an interrupt context of a control program, said child node existing within the interrupt context (an interrupt; column 2, lines 48-55; column 3, lines 22-29);

an external process outside of the interrupt context of the control program (information from an external source; column 2, lines 48-55; column 3, lines 56-67);

means for passing said packet and a first disposition of said packet to the external process, said external process to augment the packet disposition by employing a process specific means and to return an augmented packet with an augmented disposition to the child node (sending the packet to the external source and obtaining header information; column 3, lines 43-67; column 4, lines 1-35; column 5, lines 1-25); and

said interrupt context including means for receiving said augmented packet and said augmented disposition from said external process (receiving the packet; column 2, lines 55-67; column 4, lines 1-19).

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***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edwards et al. US Patent No. 6,320, 848 in view of Vaid et al. US Patent No. 6,292,465. Vaid discloses the invention substantially as claimed including classifying packets based on traffic level (see abstract).

As per claim 6, Edwards discloses “a method as recited in claim 5, wherein said at least one child node employs the classification process for application level classification” application level classification; column 2, lines 38-67; column 3, lines 3-55). Edwards does not expressly disclose “a Real Audio node”. Vaid discloses a Real Audio node. See column 5, lines 21-29; column 16, lines 44-67; column 17; column 18, lines 1-11. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the application of Edwards with the Real Audio application of Vaid. A person of ordinary skill in the art would have been motivated to do this to separate the packets based on the traffic policies of the nodes to be able to control the type of traffic generated so that the apparatus is able to process slower applications when there is less bandwidth being used.

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As per claim 26, Edwards discloses a method as recited in claim 23 (see claim 23 above). Edwards does not disclose further comprising employing the classification process for load balancing. Vaid discloses employing classification for load balancing. See column 16, lines 44-67; column 17; column 18, lines 1-11. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the application of Edwards with the traffic policy application of Vaid. A person of ordinary skill in the art would have been motivated to do this to separate the packets based on the traffic policies of the nodes to be able to control the type of traffic generated so that the apparatus is able to process slower applications when there is less bandwidth being used.

As per claim 27, Edwards discloses a method as recited in claim 1 (see claim 1 above). Edwards does not disclose further comprising employing the classification process to shape traffic. Vaid discloses employing classification to shape traffic. See column 16, lines 44-67; column 17; column 18, lines 1-11. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the application of Edwards with the traffic policy application of Vaid. A person of ordinary skill in the art would have been motivated to do this to separate the packets based on the traffic policies of the nodes to be able to control the type of traffic generated so that the apparatus is able to process slower applications when there is less bandwidth being used.

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Claims 22, 25, 31, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edwards et al. US Patent No. 6,320,848 in view of Doucer et al. US Patent No. 6,041,053. Doucer discloses the invention substantially as claimed including a technique for efficiently classifying packets using a trie based hierarchy (see abstract).

As per claims 22, 31 and 32, Edwards discloses “a method and apparatus as recited in claims 16 and 28 (see claims 16 and 28 above). Edwards does not expressly disclose a “firewall” or “border server.” Doucer discloses a classification process used for security. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the packet scheduling classification of Edwards with the packet security classification of Doucer. A person of ordinary skill in the art would have been motivated to do this because firewalls and border servers are a type of security measure used in networking and so that packets which are not authorized cannot enter the apparatus.

As per claim 25, Edwards discloses a method as recited in claim 23 (see claim 23 above). Edwards does not disclose further comprising employing the classification process for rate limiting. Doucer discloses classifying based on rate (column 1, lines 45-67; column 2, lines 1-41; column 5, lines 33-47; column 6, lines 1-17). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the packet classification based on applications of Edwards with the classification based on security of Doucer. A person of ordinary skill in the art would have been motivated to do this to separate the packets based on

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the traffic policies of the nodes to be able to control the type of traffic generated so that the apparatus is able to process slower applications when there is less bandwidth being used.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Zhang et al. U.S. Patent No. 6,498,795 discloses an ontology based hierarchy.

Bialkowski U.S. Patent No. 5,574,910 discloses a packet processing method employing a binary tree.

Wilford et al. U.S. Patent No. 5,509,006 discloses a device for swichting packets.

Edwards et al. U.S. Patent No. 6,549,521 discloses a packet switch with a decision tree.

Sakakibara et al. U.S. Patent No. 5,463,773 discloses a document classifying system using a tree.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Uzma Alam whose telephone number is (703) 305-8420. The examiner can normally be reached on Monday - Friday 8:30 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on (703) 308 - 7562. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-9052 for regular communications and (703) 746-7238 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9600.

ua

June 25, 2003

  
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